

ABSTRACT OF THE DISCLOSURE

A magnetic field transducer includes a phase transition material exhibiting a change from an antiferromagnetic phase to a ferromagnetic phase when heated above a critical temperature, means for applying a magnetic bias field to the phase transition material, and means for heating the phase transition material above the critical temperature. Magnetic recording heads that include the transducer and magnetic disc drives that include the magnetic recording heads are also described. A method of producing a magnetic field pulse including applying a magnetic bias field to a phase transition material, and heating the phase transition material to cause the phase transition material to change from an antiferromagnetic phase to a ferromagnetic phase, is also provided. The phase transition material can comprise a rare earth-transition metal alloy, where the alloy is heated above a compensation temperature.